

DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES

Office of Structural Materials

Quality Assurance and Source Inspection



Bay Area Branch

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Contract #: 04-0120F4Cty: SF/ALA Rte: 80 PM: 13.2/13.9File #: 13.28**WELDING INSPECTION REPORT****Resident Engineer:**Pursell, Gary**Address:** 333 Burma Road**City:** Oakland, CA 94607**Report No:** WIR-008903**Date Inspected:** 11-Sep-2009**Project Name:** SAS Superstructure**OSM Arrival Time:** 1300**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 2130**Contractor:** Oregon Iron Works Clackamas, Or.**Location:** Clackamas, OR**CWI Name:** Mike Gregson, Jose Salazar**CWI Present:** Yes No**Inspected CWI report:** Yes No N/A**Rod Oven in Use:** Yes No N/A**Electrode to specification:** Yes No N/A**Weld Procedures Followed:** Yes No N/A**Qualified Welders:** Yes No N/A**Verified Joint Fit-up:** Yes No N/A**Approved Drawings:** Yes No N/A**Approved WPS:** Yes No N/A**Delayed / Cancelled:** Yes No N/A**Bridge No:** 34-0006**Component:** Hinge K Pipe Beams**Summary of Items Observed:**

The Quality Assurance Inspector Sean Vance arrived on site at Oregon Iron Works, Inc (OIW) in Clackamas, OR, to randomly observe the in process welding of the Hinge K Pipe Beam assemblies. The QA Inspector arrived on site to randomly observe the OIW Quality Control (QC) Inspectors in process and completed visual and nondestructive testing. Upon the arrival of the QA Inspector the following observations were made:

OIW Fabrication Shop-Bay 3

Hinge-K Pipe Beam Assembly 102A-1: 9/11/09

a111-1 Forging to a110-1 Base Plate

QA Inspector noticed that OIW had previously placed this forging assembly 102A-1 in position and was in-process of machining the completed stiffeners, utilizing a mechanical machining bit. QA Inspector had previously measured the stiffener heights to be approximately 662mm and noted that approximately 12mm of material (485W) was in process of being removed, to achieve a desired result of 650mm (+3mm/-10mm), which is in accordance to contract requirements. QA Inspector had previously spoken with OIW machinist and OIW explained that the mechanical machining bit was set to remove approximately 1/32" (.8mm) of material (485W), per each cutting pass. QA Inspector noted that once the machining process is complete, OIW will perform dimensional measurements utilizing a laser tracker, prior to fitting the a109 (Post Tension Cap) plates. See attached picture below.

Hinge-K Pipe Beam Assembly 102A-2: 9/11/09

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a111-2 Forging to a110-2 Base Plate

QA Inspector noticed welder #J6, Mr. Craig Jacobson, was in process of performing submerged arc welding, on the b108 stiffener plate to a107 stiffener plate, designated as weld joint # W1-116, in the flat position. QA Inspector noted that this weld joint was designated as a partial joint penetration (AWS D1.5 TC-P5-S) and verified Mr. Jacobson was currently qualified for this process/position. QA Inspector noted that Mr. Jacobson was utilizing OIW approved welding procedure specification (WPS 4020) and randomly recorded pre-heat temperatures of approximately 350 degrees Fahrenheit (177 C). QA Inspector noted that QC Inspector Jose Salazar was present to monitor in-process welding parameters (amps/volts) and noted that Mr. Salazar had previously recorded in-process welding parameters of 563 amps and 35 volts, on the cover passes. QA Inspector verified in-process welding parameters of 580 amps and 35 volts, which appears to be in compliance with the applicable welding procedure specification and contract requirements. See attached picture below.

Hinge-K Pipe Beam Assembly 102A-3: 9/11/09

a111-3 Forging to a110-3 Base Plate

QA Inspector witnessed QC Inspector Jose Salazar continuing to performing 100% magnetic particle testing on the base metal of forging a111-3, after removal of the following stiffeners: e108 (WJ #126, 127), f108 (WJ #138, 139), c107 (WJ #142, 143), e108 (WJ #146, 147) and d108 (WJ #148, 149). QA Inspector noted that after performing magnetic particle inspection on the full length tack welds on these stiffeners to a111-3 forging, that Mr. Salazar had previously found multiple linear indications, which were presumed to be cracks. Mr. Salazar had previously explained to QA Inspector that these indications appeared, in most cases to run the full length of the tack welds and possibly into the base metal of the a111-3 forging. Mr. Salazar had previously explained that these stiffeners were removed, to accommodate the 100% magnetic particle testing on the base metal. After performing the magnetic particle testing, Mr. Salazar had previously explained that multiple linear indications were still present and Mr. Troy Smith, was in-process of grinding the indications, to possibly remove them. QA Inspector had previously performed 100% magnetic particle inspection on all the full length tack welds, on the radial stiffeners and found additional linear indications, which appeared to be cracks, on the a108 stiffener to a111-3 forging (WJ # 145) and the b108 stiffener to a111-3 forging (WJ #160). QA Inspector notified QC Inspector of the testing results and Mr. Salazar explained that the indications were in-process of grinding and magnetic particle inspection will be performed, after the grinding is completed. See attached picture below.

OIW Fabrication Shop-Bay 6 (ESW Overlay Process)

Hinge-K Pipe Beam Fuse Assembly 120A-5: 9/11/09

a124-14 Half Fuse to a124-2 Half Fuse

QA Inspector noticed that the first ESW stainless steel overlay passes were in-process, on this fuse assembly 120A-5. QA Inspector witnessed welder #F17, Mr. Igor Frolov performing electro slag welding (ESW) on the first layer welding passes, (approximately 95% complete), in the flat position, utilizing Soudokay brand Soudotape 309L stainless steel consumable strip. QA Inspector noted the first layer passes would be completed utilizing the 309L consumable strip and the remaining second & third layer passes would be completed utilizing Soudokay brand Soudotape 316L stainless steel consumable strip, per contract requirements. QA Inspector randomly noticed QC Inspector's Mike Gregson and Jose Salazar were present, to verify in-process welding parameters (amps/volts) and monitor in-process continuous pre-heat temperatures. QA Inspector spoke with QC Inspector Jose Salazar and Mr. Salazar explained that welding amps were recorded as 1200 amps/25.2 volts, travel speed at 269mm/min. and a pre-heat temperature recorded at 225 Fahrenheit (107 C). QA Inspector verified in-process welding parameters of 1200 amps/25.2 volts and recorded pre-heat temperatures of approximately 225 Fahrenheit (107 C) QA

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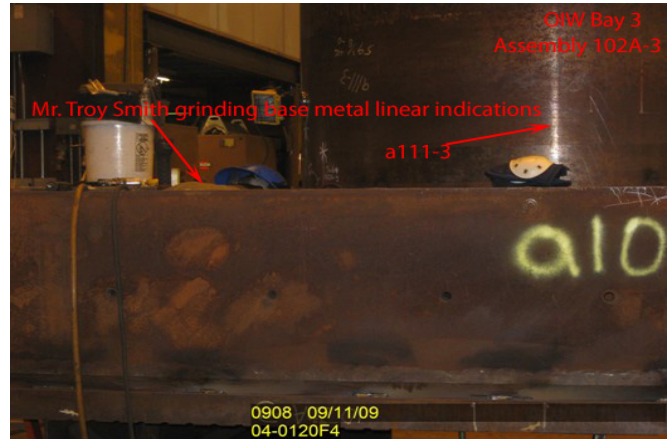
Inspector verified Mr. Igor Frolov was currently qualified for this welding process/position and randomly recorded pre-heat temperatures of approximately 225 Fahrenheit. QA Inspector noted that Mr. Igor Frolov appeared to be in compliance with the applicable approved welding procedure specification (WPS 7003). See attached picture below.

Material, Equipment, and Labor Tracking

QA Inspector Sean Vance performed a verification of material, personnel and equipment involved with the project.

The QA Inspector observed at Oregon Iron Works: 5 OIW production personnel and 2 QC Inspectors.

The QA Inspector observed at AG Machining: 1 Machinist using a horizontal lathe.



Summary of Conversations:

As noted above.

Comments

This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact Mohammad Fatemi (916) 813-3677, who represents the Office of Structural Materials for your project.

Inspected By: Vance, Sean

Quality Assurance Inspector

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Reviewed By: Adame,Joe

QA Reviewer